these new works and his own views on the subject. This he has done in the present essay.

The descriptions referred to by Dr. Agardh appeared in his work entitled, "Florideernes-Morphologi" (published in the Transactions of the Royal Swedish Academy in 1879); but as this work was written in Swedish, it has probably not met with so many readers as it deserves. With a view to make this work more accessible, Dr. Agardh issued, in 1880, a Latin translation of it.

After stating the views of the essayists, and commenting on them, he quotes the concluding words of Mr. Bigelow, the most recent of them: "We have to leave our subject for the present in an unsettled and therefore rather unsatisfactory condition."

Dr. Agardh then quotes from his Swedish work the description of the structure of Lomentaria and Champia, showing that in the young state the interior is never hollow, but is interlaced with delicate coloured filaments, which disappear in the older parts of the plants. He also mentions that some Florideæ, which are apparently hollow, such as Chrysymenia, Dumontia, &c., are in part filled with a gaseous fluid, which probably assists such plants as have thin walls in preserving an erect position.

Dr. Otto Nordstedt is already well known to British algologists by the specimens of fresh-water Algæ which he has issued in conjunction with Prof. Wittrock, of Stockholm. The work he now sends us proves that he is a good draftsman and linguist, as well as algologist. It is on the fresh-water Algæ of New Zealand, and is written in very good English, and carefully got up in every respect. The author mentions that the Desmids have received his greatest attention, and that comparatively little attention has been bestowed on the Phycochromaceæ; a few only have been taken from brackish water.

Dr. Nordstedt mentions that he has not met with any new genus of fresh-water Algæ, or with any genus not represented in Europe, with the exception of *Phymatodocis*, which, he tells us, occurs also in North and South America, and in Australia.

With regard to the localities in New Zealand where fresh-water Algæ are found, no one is better acquainted with them than Dr. Berggren, who had made an interesting collection, subsequently examined by Dr. Nordstedt, and included in the present work on these plants. Dr. Berggren's remarks, as recorded by Dr. Nordstedt, will be read with interest. He says:—

"The fresh-water Algæ in New Zealand do not, from several causes, occur so frequently as in the regions of the corresponding latitudes of the northern hemisphere. The ground, which is generally sloping, gives a rapid course to rivers and brooks, and the surface occupied by stagnant water, swamps, and bogs is not very extensive. The comparatively small number of water- and bog-plants growing sociably together (such as *Potamogeton* and others), which in the stagnant waters and marshy spots of Europe are favourable to the existence of the fresh-water Algæ, is of great consequence. The usually dry summer generally causes the draining of those lowland spots, which in the wet season (the winter) are swamps. Therefore the Algæ are more frequent in the damp and moss-grown localities of the mountainous regions in the Northern as well as in the Southern Island. In the rivulets from hot springs in the hot lake district in the Northern Island, the Algæ are especially Phycochromaceæ, but likewise Confervaceæ and Zygnemaceæ, to be found growing in great abundance."

Dr. Nordstedt mentions that from his examination of Dr. Berggren's collection, it appears that the swampy ground on the Canterbury Alps and the highlands round the Taupo Lake are the best localities, especially for Desmids.

The description of the New Zealand Algæ is supplemented by lists of a few fresh-water Algæ from Australia and the Hawaiian Islands. Then follow a list of the principal works consulted, and an index. The work is illustrated by seven plates, the figures of which are all drawn—and well drawn—by the author.

MARY P. MERRIFIELD.

## *THE JOURNAL OF MORPHOLOGY.*[1]

THE year 1887 marked an epoch in the advance of natural science in America, as that in which the above-named journal made its appearance. The first number was not published until some months after the advertised time, but, once in circulation, it became clear to all that the delay was warranted by the eminently satisfactory result obtained. The journal was defined in the preliminary advertisement as one "devoted principally to embryological, anatomical, and histological subjects," it being stated that "only original articles, which deal thoroughly with the subject in hand, will be admitted to its pages." The three parts before us present in the aggregate 593 pages crown octavo, with thirty plates, and woodcuts interspersed with the text. Seventeen papers have in all appeared, and of these, seven or eight are devoted to embryology, with a total of 361 pages, and four or five to anatomy and histology, with that of 182 pages. One is purely experimental, and deals with the mental powers of spiders (37 pages), and another is largely palæontological (12 pages), while the three which remain (61 pages in all) are largely controversial. The illustrations are throughout most excellent, but it is surprising to what an extent the work in this department has been done in Germany, especially as it has resulted in "a great loss of time and inconvenience in supervision." We are assured, however, that "there is no remedy except in the employment of an expert lithographer, to work under our immediate direction." We sincerely hope the editors may soon see their way to the employment of such an one, for surely he is to be found in the United States.

It will be seen from the foregoing that while, in the early issues, all branches of animal biology have been represented, there is a marked preponderance of embryological literature; and, taking into account the share which the discursive papers contribute towards this subject, there would appear to be a predisposition in favour of the same. The study of embryology is one which lends itself, by virtue of its constitution, to the production of hypotheses and broad generalizations; and, in knowledge of the extent to which previous workers have often availed themselves of this, we are led to inquire how far the predisposition in question may be due to this cause. Certain of our American brethren are notorious for their power of accumulating superfluous detail. Publications could be cited in which the "padding" is inversely proportionate to the actual work done, and we would fain desire that the authors should work more and write less; indeed, the senior editor has acknowledged this. He writes: "Concentration is our need"; and further, "The inaccessibility of our literature—scattered as it is among the publications of so many societies and institutions, and mixed up with a mass of heterogeneous matter that has no value for a zoologist—is notorious." All this being so, it is not surprising that the editors have decided to issue the numbers only "as often as the requisite material is furnished."

In estimating the usefulness of a private journal such as this, especially when so largely devoted to the interests of a subject lending itself to broad generalization, we cannot refrain from deploring the tendency, elsewhere manifest, towards the introduction of a bias in favour of certain restricted lines of thought. We meet with indications of cliquism and faction, and it would not be difficult to show that, in respect to this and some other matters, such journals at times compare unfavourably with that of the Society, which is kept in check by freedom of discussion and by criticism at the hands of referees. Instances are not wanting to show that the elementary student, starting research, is at times turned adrift in the labyrinths of a highly-involved problem, before he knows with what he is dealing; and if, as has occasionally happened, he be working under the influence of a preconceived bias, mischievous results must accrue. Although, in the pages before us, no such instance as this is actually forthcoming, we are of opinion that, in respect to certain matters referred to below, consultation with specialists prior to publication, would have resulted in the withdrawal of heresies which constitute the only jarring element in this beautiful work.

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[1] *The Journal of Morphology*, edited by C. O. Whitman, with the co-operation of E. P. Allis, Jun. (Boston: Ginn and Co.)

The authors of the papers thus far published are, for the most part, men of established repute. For many of them we entertain a personal regard, and there are among their leading productions monographs that are continuations of those with which, under the old *régime*, they have honoured our national journals. Others there are with the preliminaries to which we claim a proud familiarity, and many of us look back with pleasure upon the fact that one of the original communications on the subject of the opening paper was made in our midst (cf. P.Z.S., 1886, p. 343). The journal makes its *début* under auspicious circumstances, and the above and other similar considerations show it to be the outcome of a growing want, in the unfolding of which we have ourselves had a stake; it is manifestly our duty, therefore, to support it.

The papers, when considered individually, must be declared of excellent merit, and, detailed criticism being here impossible, we pass to a brief comment upon those most conspicuous or most likely to raise discussion. Chief among all are the contributions of the senior editor. We defer mention of the more philosophic of these till the end of our notice; his "Contribution to the History of the Germ-Layers in Clepsine" (78 pages) is a marvellously-wrought piece of work; and, if his leading deductions concerning the fate of his "macromeres" be capable of support, he may well lay claim to a masterly stroke in advance. With his "teloblasts" there is initiated an entirely new line of inquiry, in itself refreshing after the ceaseless quibbles as to the fate of the "blastopore," while it gives promise of a direct and important bearing upon some of the most revolutionary of recent embryological discoveries (*e.g.* that concerning the part played by the ectoblast in the development of the excretory system). The author marshals his facts in faultless sequence: his monograph is a model of its kind, the more contemplated the more to be admired; and it fully establishes his reputation as a leader among American embryologists.

Four of the papers offered us pertain to the eye, with a total of 171 pages. The authors of these are Messrs. Patten and Kingsley, and the first of the series, by the former, is a condensation of his larger contribution to the Naples *Mittheilungen*. This paper has obtained a notoriety on account of the heated discussion which it evoked, and, setting personalities aside, we admit that the author's ill-conceived "dynamophagous organs" received, together with his more flagrant heresies, a well-deserved refutation. Many of this investigator's suggestions and aspirations are neither better nor worse than those of his critics and predecessors; he has, like many more enthusiasts, aimed at high game with a resolve to be sensational at all hazards. It must be admitted, however, on careful perusal of his work, that he erred in an over-enthusiasm, and that there underlies his remarkable production a substratum of solid fact. Excessive theorizers, like excessive controversialists, stand in a fair way of being shelved, if only by virtue of their verboseness. On examination of the later contributions of this author, we observe that he has profited by his hard-earned experience, and that he has, under the influence of his able editor, chosen the wise, though very obvious, path. The other writer on this subject produces a paper of an altogether more modest cast. In his 16 pages there are embodied a series of very useful observations and suggestions which, if ultimately accepted, will simplify our conceptions of the complex visual organ in the Arthropods. He differs from his contemporary on points of primary importance. We welcome this as a healthy sign (cf. *ante*), and the reader will find that in these papers, and others proffered in this journal, differences of opinion are asserted in inoffensive language, in a spirit as free of both animus and bias as it is becoming the dignity of the subject in hand.

Prof. Osborne contributes two most interesting papers: one, on the internal structure of the Amphibian brain, is the completion of a series of beautiful studies, largely inspired by our greatest living master (cf. *Morph. Jahrb.*, vol. xii. p. 247); the other, on the fœtal membranes of the Marsupials, is also a continuation of earlier studies, and we watch the growth of them with intense interest, in view of those so long looked for at the hands of a countryman of our own, upon the same in the Australian forms.

One of the most ambitious communications is that bearing the title, "On the Phylogenetic Arrangement of the Sauropsida." The author has elsewhere expressed many of his views on the subject; his enthusiasm and daring admitted, we cannot pass unnoticed the superficiality of his essay; in respect to this, it does not even come within the conditions imposed by the founders of the journal. More than that, however. Reference is made by the author to his order *Proganosauria*; if his primary diagnosis of the same (*Zoolog. Anzeiger*, 1886, p. 189) be compared with the original drawing (Proc. Amer. Phil. Soc., vol. xxiii. No. 121) and with the replicas in our national collection, it will be found that the existence of his leading structural peculiarity (we refer to the presence of five distinct tarsalia) is at least doubtful. Even if it did exist, the exaltation of such a character to a position of ordinal value would be unwarrantable, and, as employed by the author, meaningless, inasmuch as a fifth tarsale is present in the Chelonia. This he admits (cf. *Zoolog. Anzeiger*, 1888, p. 597), and in doing so he lands himself in a contradiction. We cannot but regret the hasty introduction of generalizations so sweeping into papers of a provisional nature, and we take this opportunity of entering a protest against this abuse of the "*vorläufige Mittheilung*": as a means of establishing a claim of priority in the discovery of a sound fact it is of the utmost utility, but as converted into a medium for contradiction it becomes intolerable. The over-cultivation of this unfortunate habit bids fair to involve its devotees in difficulties irrecoverable; the best work always has been, and always will be, done, as wrote Goethe, "*ohne Hast, ohne Rast.*" The waste which accrues from the abuse here deplored will ultimately find its own level, but its accumulation is none the less to be regretted.

In matters of *technique* this journal is not deficient. Its general "get-up" is most admirable, and full attention has been paid to minute detail: the type is excellent. The plates are faultless, and admirably arranged in relation to their accompanying explanations, and the eye is never offended by the unpardonable intrusion of a woodcut upon the margin of the page. One or two minor modifications might be suggested, but they are so trivial that we prefer not to burden this notice with them. We observe, with extreme satisfaction, that in leading papers care has been taken to discriminate between the more important representations of fact and the less important diagrams, the latter being interspersed among the text, in woodcut. The journal will stand the test of comparison with any of its contemporaries, and the immediate promise of a series of papers on the anatomy and embryology of Amia augurs well for its future.

Prof. Cope contributes a very characteristic paper on the tritubercular molar, the leading deduction of which is most interesting and suggestive; it reads (vol. ii. p. 21): "The tritubercular molars of man constitute a reversion to the dentition of the Lemuridæ of the Eocene period of the family of Anaptomorphidæ," and "this reversion is principally seen among the Esquimaux, and the Slavic, French, and American branches of the European race." The senior editor, discussing, in the most philosophic paper of the series, "The Seat of Formative and Regenerative Energy," writes as follows: "These higher (biological) units combine both atomic and molecular structure, but they have, superadded to and including this, a structure as a whole, which is entirely ignored in the expression, 'molecular aggregates.' As they result from the union, not of simple or complex molecules, but of complex molecular groups, their structure may be said to be at least as widely separated from the molecule as this is from the atom"; and, further, "in claiming that 'physiological units' have something higher than molecular structure and power, I am not treading on ultra-scientific ground, but following the course already sanctioned by chemistry and physics, and the only one which can ever reconcile physico-chemical and biological conceptions." We heartily recommend this valuable essay to our readers, for the author's contentions in defence of his belief that "the organism as a whole controls the formative processes going on in each part," are worthy of all the consideration that can be given them. He appears to us to underestimate the importance of recent advance in organic chemistry. The work of unravelling the constitution of the more complex organic bodies—a work in which certain of our own countrymen are playing a leading part—gives us hope beyond that which he entertains. The presence of the above-cited remarkable passages is, in itself, sufficient to invest the early numbers of this journal with a lasting interest.

We congratulate the editors upon their enterprise; they are supported by influential friends and surrounded by enthusiastic investigators; they have, in turn, fulfilled, thus far, the highest expectations of their most sincere well-wishers, and merited the confidence and support of the biological brotherhood throughout the world.

G. B. H.

## *THE BALD-HEADED CHIMPANZEE.*

THERE is no longer any room for doubt amongst naturalists as to the complete distinctness of the larger anthropoid ape of tropical Africa, the gorilla, from its smaller brother, the chimpanzee. The differences are amply sufficient for specific, if not for generic, distinction. But, on the question whether there is only one chimpanzee, spread over a great extent of the African continent, or several species confounded under the same name, there is still much difference of opinion. As long ago as 1853, M. Duvernoy communicated to the Academy of Sciences of Paris a short description of a second species of chimpanzee (see *Comptes rendus*, vol. xxxvi. p. 927), based on specimens obtained by Dr. Franquet in Gaboon in 1851. M. Duvernoy subsequently published an elaborate memoir on the same subject in the *Archives du Muséum* (vol. viii. p 1). The distinctions insisted upon by Duvernoy between his *Troglodytes tschego* and the ordinary *T. niger* were chiefly osteological; at the same time he characterized the *tschego* (from M. Franquet's description) as having the "face black, and the ears small," while, according to the same authority, the ordinary chimpanzee has "very large ears, and its face flesh-coloured."

In 1858, in a memoir also published in the *Archives du Muséum* (vol. x. p. 94), on the specimens of anthropoid apes in the Paris collection, M. Isidore Geoffroy St. Hilaire published a letter from Dr. Franquet in which the latter again insisted on the differences of the three species of anthropoid apes observed by him in the district of Gaboon. These were characterized as follows:—

(1) The *Chimpanzee*, with the face flesh-coloured, the ears red and large, and the fur black.

(2) The *Gorilla*, with the face black, the ears small and black, and the fur of a brownish chestnut, but varying in tint in different parts of the body, and with always a row of reddish hair starting from the middle of the forehead and following the line of the sagittal suture.

(3) The *N'tchego*, with the face black and the ears small, as in the gorilla. The hairs of this ape, he says, are shorter and darker in colour, and it never attains the size of the gorilla, or carries the red crest across the forehead.

In 1860, the well-known traveller Mr. P. B. Du Chaillu gave his account of the anthropoid apes of the Gaboon to the Boston Society of Natural History (see Proceedings of that Society, vol. vii. p. 296). Mr. Du Chaillu described, as a new species of chimpanzee, *Troglodytes calvus*, "with the head entirely bald to the level of the middle of the ears behind," and "having large ears," while he identified the *N'tchego* of Dr. Franquet as being nothing but the adult chimpanzee (*T. niger*). In a second communication to the same Society (*op. cit.* p. 358), he described another new species of chimpanzee, with a black face, but the forehead not bald, which he called *Troglodytes kooloo-kamba*, from its peculiar cry.

In 1861, the late Dr. J. E. Gray examined Mr. Du Chaillu's specimens of apes, and came to the conclusion that both his supposed new species were only varieties of the common chimpanzee (see P.Z.S., 1861, p. 273). Such also, as was stated by Dr. Gray, was my own opinion at that time, and I have remained in a doubtful state of mind on the subject until a recent period. But the acquisition of the fine female specimen of chimpanzee, generally known by the name of "Sally," by the Zoological Society in 1883, caused me to change my views very materially. There can be no doubt that this animal, when compared with specimens of the ordinary chimpanzee, presents very essential points of distinction. The uniform black face and nearly naked forehead, which is only covered with very short black hairs, together with the large size of the ears, render "Sally" conspicuously different from the many specimens of the common chimpanzee (at least thirty in number) that the Society has previously received. I was at first inclined to believe that "Sally" might be referable to the *Troglodytes tschego* of Duvernoy. But nothing is said, in M. Duvernoy's description, of the bald forehead; and the small ears attributed to the *N'tchego*, are directly contrary to this hypothesis, as in "Sally" these organs are exceedingly large and prominent. On the whole, I was inclined to believe that "Sally" might belong to the *Troglodytes calvus* of Du Chaillu, and she was accordingly entered in the Register of the Society's Menagerie as the Bald-headed Chimpanzee (*Anthropopithecus calvus*[1]), which is certainly a very appropriate name, even if it be not technically correct.

In the beginning of December we purchased of Mr. Cross, of Liverpool (from whom we had also obtained "Sally"), a second specimen of the Bald-headed Chimpanzee, likewise a female, which, although much smaller in size, closely resembles "Sally" in every other respect.

Fortunately, there is now in the Gardens a young specimen of the Common Chimpanzee (*Anthropopithecus troglodytes*), presented to the Society in May last by

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[1] The term *Troglodytes* being more properly used for a genus of birds, it becomes necessary to employ for the chimpanzees the generic term "*Anthropopithecus*," of Blainville, as suggested by Peters in 1876.